Available online at www.sciencedirect.com

SciVerse ScienceDirect

Procedia - Social and Behavioral Sciences 46 (2012) 992 – 997

Procedia
Social and Behavioral Sciences

WCES 2012

Designing a model to recognize and manage intellectual capital in education system

Khalkhali Ali[a1], Shakibaei Zohreh[b], R. Khodadoost[c]

[a]*Assistant Professor, Department of Pos Graduates,Tonekabon Branch, Islamic Azad University, Tonekabon, Iran. khalkhali_ali@yahoo.com*
[b]*Assistant Professor, Department of Pos Graduates,Tonekabon Branch, Islamic Azad University, Tonekabon, Iran.*
[c]*M.A. in Educational Research,Tonekabon Branch, Islamic Azad University, Tonekabon, Iran.*

Abstract

The purpose of the paper was to design a model in order to diagnose and manage Intellectual Capital in the education system of Iran. The research type was descriptive-survey. The research population included all of the experts and specialists in education in Iran. The sample volume was considered 500 participants that selecting by the Purposeful sampling method based on matching. A questionnaire was used to recognizing the components were designed to identify Intellectual Capital in the education system. In order to specify the basic factors of this components, has been used the factorial analysis method in type of Principal Components analyzing and statistics of Chi Square. After conducting the Varimax rotation and by 3 times of resuming, the results of the analysis of the principal components separated 5 factors from each other which were entitled as Establishment of Comprehensive Quality-oriented Strategy, Knowledge-Based Continuous Improvement, Benchmarking of Instructors, Development of Self-Evaluation and Participatory Development. Also, a model was designed for diagnosing and managing the Intellectual Capital for the education system in Iran. The model was approved in terms of adequacy and based on the experts' evaluation.

Keywords: Intellectual Capital, Education System,Model

1.Introduction

By the rapid progress in technology, specially, in the field of the communication, computer and biology engineering, world economic growth pattern has changed basically since 1990s, and subsequently, the knowledge replaced monetary affairs and physical capitals as the most significant investment. (Chen et al, 2005). As an asset, knowledge as compared to other varieties of the assets possesses this unique nature that the more it is to be used, the more its value increases (Pal et al, 2004)..

In today's knowledge-based environment, the Intellectual Capitals are of more value and importance for the organizations and institutes than the physical capitals, i.e., the Intellectual capitals are raised as the real capital and a part of the most strategic capitals of the organizations of the current age, for the knowledge-based organizations in particular. In

 doi:10.1016/j.sbspro.2012.05.236

order to attain a stable competitive advantage, the knowledge-based organizations, therefore, require to identifying and managing consciously and systematically their own Intellectual Capitals.For this reason, designing and the employing a best-fit approach in order to identify and manage the Intellectual Capital are of great importance (Duri and Salavatei, 2008).

Today, the movement towards the knowledge-based economy has led to the change of the paradigm dominating over the industrial economy. It is in such a manner that it can be seen as the appearance of an economy based upon the information and knowledge. Such an economy needs to have its basis on the axis of the Intellectual Capital.

Where as the educational system can play a role in the various dimensions to create and convert the organizations into the knowledge- based organizations, paying attention to it is necessary. In this connection, the total roles, which can be played regarding the knowledge by the educational system, are as following:

Assistance to create and introduce the services and productions which the most rate of their value is to be obtained from the knowledge.

Definition and the conversion of the processes of the knowledge- based work.

Education and training of the talented force as a knowledge worker.

Assistance to produce, develop, share, keep and employ the required knowledge's for university. Industry government and society.

Rehabilitation and development of the available human resources.

Assistance to create the culture and the required beds in order to admit the principles of the knowledge management.

Assistance to convert the employee into the knowledge workers.

Assist to turn the organization into the knowledge based organization.

Assist to establish the knowledge works. (Afrazeh and Baeidfar, 2009)

The current paper deals with studying the indexes of the Intellectual capital in the educational system and searches for replying the following questions in order to present a model for the recognition and management of the Intellectual capitals:

what is the main component of intellectual capital in an educational system?

Which factors are this component saturated from?

What is the appropriate model in order to diagnose the Intellectual capital in educational system?

What is the appropriate model in order to manage the intellectual capital in the educational system?

2.Research Methoology

The present study is descriptive and analytical in nature, conducted via the surveying method. The tools used in the research of the questionnaire of the researcher are to be made. In order to prepare the current questionnaire, the reliable questionnaire of the Intellectual capital (Nike Bontis, 1998) was used as a basis and a questionnaire, including 56 questions was designed by refereeing to the literature of the research and adding h new components proportional to the research society.

This questionnaire engages in the assessment of the indexes of the intellectual capital in the educational system with a five section spectrum (very high, high, medium, low, very low).They statistical society consists of the connoisseurs, experts, specialists; professors of the universities and the other educational and researching centers of Iran.

Which a sample, including 500 individuals was selected out of the considered society and a questionnaire was sent to these individuals through Email, with regard to the objective of the research and conducting the factorial analysis.After collecting the required data and information's by the questionnaire, they were all encoded and then entered into the spss 18 soft ware.

In order to confirm or deny the question designed scientifically in the paper, Cronbach's Alpha correlational coefficient, the method of analyzing the principal components (PC), the tests of the factorial analysis and regression analysis have been used.

3.Findings

The first question: what is the main components of Intellectual capital in an educational system?

Considering the view point of Bontis and, also, most theoreticians of the concept of the Intellectual capital, these three components were studied as the basic components of the Intellectual capital in this research too. In order to specify the factors of the intellectual capital, the method of the analysis of the principal components (pc) has been used.

Test of the reliability of sampling and the Bartlet test (KMO):

Before, we are dealing with the factorial analyzing test; it is, at first, necessary that the reliability of the sampling is to be explained. Because the proviso of the factorial analysis is that the questions of the test are to be appropriate.

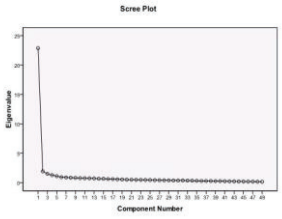
Table 1: **KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.973
Bartlett's Test of Sphericity	Approx. Chi-Square	12897.119
	df	1176
	Sig.	.000

The second question: Which factors are this component saturated from?

In order to specify that what factors these components have been saturated, two stages of the factorial analysis were conducted in the various steps which, if correlation of the questions was less than 0.3 in each stage and also if the questions devoted to some factors were less than3, these questions would omit and the internal correlation between the factors would estimate again.

Plot 1: The scree plot relating to 5 separated factors:



The percent of the variance explicated by each one of the factors before and after rotation is as follows:

Table 3: The percent of the joint (common) variance by 5 extracted factors.

Total Variance Explained				
Component	Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings	
	% of Variance	Cumulative %	% of Variance	Cumulative %
1	46.679	46.679	14.931	14.931
2	3.951	50.630	14.377	29.308
3	3.078	53.708	12.983	42.291
4	2.626	56.334	8.896	51.187
5	2.283	58.617	7.429	58.617

Factor 1, Factor 2, Factor 3, Factor 4 and Factor 5 explicate the common variance, respectively, as follows:F1: 14.931%, F2: 14.377%, F3: 12.983%, F4: 8.896% and F5: 7.429%

The total of 5 above – mentioned – factors explicate 58.617% of the common variance. 5 extracted factors, considering their nature, were named as following titles:

Factor 1: Establishment of comprehensive Quality- oriented strategy.

Factor 2: The knowledge – based continuous improvement.

Factor 3: Benchmarking of Instructors.

Factor 4: Development of self- Evaluation

Factor 5: Participatory Development

Table 4: The table of the factors and a brief definition of them

Establishment of comprehensive Quality- oriented strategy	To make sure of the existence and execution of the quality in the inputs, processes and outputs of the educational system.
The knowledge – based continuous improvement	The existence of the perfect skill, proficiency, and expertise in order to attract, create and employ the new knowledge aiming at the growth, Development, progress and survival in the full of turbulence and unpredictable environment of the new age.
Benchmarking of Instructors	Paying attention to the individual and personal attributes of the instructors and their key role in the education and the educational system.
Development of self- Evaluation	Paying attention to the increase and self evaluation in the educational system.
Participatory Development	The existence of the between the organization networks and based upon the cooperation between the educational system and other organizations is order to meet the needs.

The available spectrum in the questionnaire of the Intellectual capital is the Likert spectrum which places a continuum from very high up to very low in front of a subject.

The reliability of the test collection with Cronbach's Alpha coefficient has been estimated equal to 0.97 which is a high reliability and shoes that the collection of the questions of testing the Intellectual capital is of the high internal coordination.

The third question" Which is the appropriate model in order to diagnose the Intellectual capital in the educational system?

The results of the regression analysis show that the Intellectual capital consists 5 factors which the factor of the establishment of the comprehensive Quality- oriented strategy a correlates directly with the factors of the knowledge Based continuous improvement and benchmarking and promotion of the instructors and correlates indirectly with the factors of the development of the self – Evaluation and participatory development.

The fourth question which is an appropriate model in order to manage the Intellectual capital in the educational system?

Considering the presented model in order to discern the Intellectual capital and, also the literature of the research and the findings the paper, it can be expressed following steps in order to manage the Intellectual capital in the educational system:

Identification and classification of the knowledge strategies in the arena of the educational system.

Evaluation of the available assets and knowledge strategies in the educational system.

Establishment of the comprehensive Quality oriented strategy in the educational system.

Paying attention to the crucial role of the instructors as the knowledge workers in the educational system.

Planning and investing in order to attain a multilateral knowledge – based system and structure.

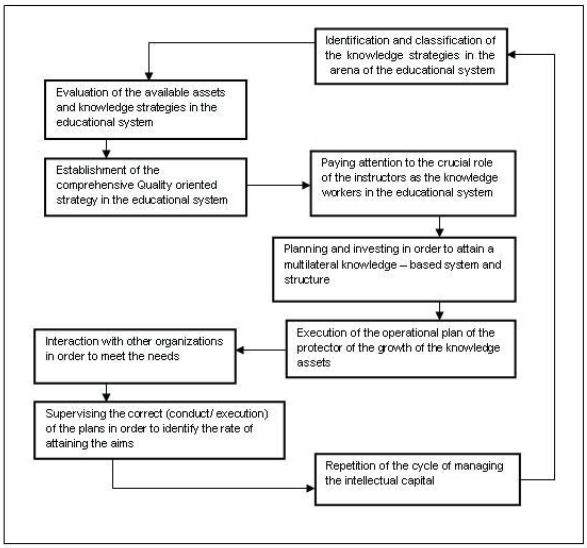
Execution of the operational plan of the protector of the growth of the knowledge assets.

Interaction with other organizations in order to meet the needs.

Supervising the correct execution of the plans in order to identify the rate of attaining the aims.

Repetition of the cycle of managing the intellectual capital.

Plot 3: The suggested model of the management of the Intellectual capital in the educational system.



.

Is the presented model of the management of the Intellectual capital in the educational system is of the required adequacy?

In order to confirm the competence of the above model, this model was E- mailed for a few experts and specialists and the results were analyzed as follows considering the presented view points and the usage of the x2 (chi square)test.

Table 10: The estimated x^2(chi square)

Chi-Square	9.800
df	1
Asymp.Sig.	0.002

with regard to the estimate x2(chi square), that is, 9.80 which is higher than the rate of the table in the significance level of 0.01 , i.e. 6.63, the assumption of the zero assumption of denying and the assumption of the research based upon that the related model is of the required competence are thus to be confirmed.

4.Discussion

The result of the current research is the presented models in order to assess and manage the Intellectual capital in the educational system.

In the comparison of the models of the paper with some presented frameworks and models in the scope of the intellectual capital. The following results were obtained:

In this model, the human capital can be considered in The same orientation with the Benchmarking and promotion f the Instructors and the development of the self – Evaluation, and the Internal structural capital can be regarded in the same orientation with the factors of the establishment of the comprehensive quality- oriented strategy and the knowledge – based continuous improvement and the structural relational capital can be regarded in the same orientation with participatory development.

Annie Brooking's framework of the Intellectual capital: This framework which has been introduced by brooking in 1996 includes the substructural Assets, the Intellectual ownership Assets, Human Focused Assets and the market Assets.

Market assets includes the external connections of the organization and relationships with the customers, and the human-centered assets consist of the organizational possessions which are to be existed in such a way from the port or input of the activity or the presence of the individuals in the organization, assets related to the intellectual ownership are as follows:

The legal authorities which an organization has acquired in order to protect from it's own possessions. Finally, the substructural assets of the organization consist of the managerial processes, networks. Financial systems and etc.

References

Afrazeh Abbas and Baeidfar marzieh (2009)"the Intellectual capital, the connecting point of the government, university and industry", the growth of the technology. The specialized periodical of the parks and growth centers issue, No.11pp 41-47.

Olveh and Nilce, solaimani Ali (2005)" well – Balanced scoring card" the publications of the center of the (education/ training) and the Industrial researches of Iran.

Shams Naser and Moballegh Mehdi (1999): "The designation and explication of the indexes of the productivity of the universities". The publications of the Amir kabir University.

Bontis, Nick. (2000)" Assessing Knowledge Assets: A Review of the Models Used to Measure Intellectual Capital. Ontario" McMaster University (Retrieved October 10, 2007, from: www.business.mcmaster.ca).

Bontis, N. (1999)"Managing organizational knowledge by diagnosing intellectual capital: Framing and advancing the state of the field", International Journal of technology Management, Vol.18 No .5/6.pp.433-462.

Brooking, A. (1996)" Intellectual Capital: Core Assets for the Third Millenium Enterprise" London, Thomson Business Press.

Chen, J.; Z.and Xie, H. Y., (2004)" Measuring intellectual capital: a new model and empirical study", Journal of Intellectual capital, Vol. 5, No. 1. pp. 195-212.